Remarks

In the present paper, Claims 1-38 are pending. Claims 30-38 have been withdrawn from consideration. The claims have not been amended.

Allowable Subject Matter

The applicants would like to thank the Examiner for the early indication of allowable subject matter in claims 8-13, 25 and 27. However, the applicants have not rewritten the objected to claims into independent form at this time because the applicants believe that the base claims are patentable over the cited art as set out in greater detail below.

Statement Of The Substance Of The Interview

On December 08, 2006, Thomas E. Lees, on behalf of the applicants, conducted a telephone interview with Examiner Pham. Thanks to the Examiner once again, for his time and consideration during the telephone interview. No demonstrations were utilized. Additionally, no exhibits or proposed amendments were transmitted to the Examiner. During the interview, the process direction pixel correction disclosed in the primary reference cited in the Office action, U.S. Pat. No. 5,585,836 to Pham et al., was compared and contrasted with the method of adjusting an image to compensate for laser beam process direction position errors as claimed in claim 1 of the present application.

During the interview, the Examiner agreed with the applicants' arguments that Pham does not teach or suggest storing adjusted image data to a second memory location and deriving a laser signal from the adjusted image data in the second memory location as claimed in claim 1. The Examiner further indicated that his search may need to be updated. The thrust of the applicants arguments during the interview are as substantially set out in the Arguments/Remarks section of this paper.

35 U.S.C. §102

Claims 1, 3-4, 19, 21, 23, 24 and 26 stand rejected under 35 U.S.C. §102(b) as being unpatentable in view of U.S. Pat. No. 5,585,836 to Pham et al. (hereinafter, Pham).

According to the M.P.E.P. §706.02, in order to be anticipating under §102, the reference must teach every aspect of the claimed invention. *Carella v. Starlight Archery and Pro Line Co.*, 804 F.2d 135, 138, 231 U.S.P.Q. 644, 646 (Fed. Cir. 1986).

With respect to claim 1, and the claims that depend there from, Pham fails to teach or suggest at least a method of adjusting an image to compensate for laser beam process direction position errors in an electrophotographic apparatus comprising storing adjusted image data to a second memory location and deriving a laser signal from the adjusted image data in the second memory location.

With respect to claim 21, and the claims that depend there from, Pham fails to teach or suggest at least a second memory location for storing adjusted image data and a video processor operatively configured to derive a laser signal suitable for processing by the printhead based upon the adjusted image data from the second memory location.

As seen in Fig. 8 of Pham, bow can occur when printing a line of pixel data. The exemplary scan line bows across three pixel lines. Accordingly, each scan line is broken down into three column groups, designated as Group A, Group B and Group C[1]. A bow corrected scan line can thus be formed by combining three lines of pixel data into a single scan line to compensate for the bow of the pixel writing operation. In the illustrated example, bow is compensated by combining pixel data within the range of Group A from a first line of pixel data, with pixel data within the range of Group B from a second line of pixel data, with pixel data within the range of Group C from a third line of pixel data.

The hardware for performing a bow correcting operation is shown in Fig. 9 of Pham. In general, the hardware for performing bow correction includes a FIFO 402 (designated as LINE BUFFER #1), a second FIFO 404 (designated as LINE BUFFER #2), a data selector 420 and a template ram 406. The bow corrected pixel data is the output of the data selector 420, which is carried on data lines 403.

[1] See for example, U.S. Pat. No. 5,585,836. Col. 13. lines 25-42.

To correct bow, a first line of 6-bit wide pixel data is simultaneously copied into LINE BUFFER #1 and the DATA input of the data selector 420 via data line 401. After the entire line of pixel data has been written into LINE BUFFER #1, the next line is written.

To write a second line of pixel data, the 6-bit wide pixel data in LINE BUFFER #1 is cascaded into LINE BUFFER #2. The pixel data from LINE BUFFER #1 is also simultaneously copied to the DATA-1 input of the data selector 420. Further, a new line of pixel data is written to LINE BUFFER #1 and is also simultaneously copied to the DATA inputs of the data selector 420 substantially as described above.

To write a third line of pixel data, the 6-bit wide pixel data in LINE BUFFER #2 is cascaded into the DATA-2 input of the data selector 420. Moreover, the 6-bit wide pixel data in LINE BUFFER #1 is cascaded into LINE BUFFER #2 and is also simultaneously copied to the DATA-1 input of the data selector 420. The third line of pixel data is written to LINE BUFFER #1 and is also simultaneously copied to the DATA inputs of the data selector 420, substantially as described above. Thus, three lines of pixel data are available to perform the bow correcting operation. Additionally, LINE BUFFER #1 and LINE BUFFER #2 each store an entire line of pixel data *that has yet to be bow corrected*[2].

To write one bow corrected line of pixel data to the LEDs of the printhead, the data selector 420 passes pixel data from the current pixel line (the third line of pixel data as described above) via its DATA inputs for the LEDs associated with Group A. The data selector 420 passes pixel data from the previous pixel line (second line of pixel data in LINE BUFFER #1 as described above) via its DATA-1 inputs for the LEDs associated with Group B. Further, the data selector 420 passes pixel data from two previous lines (first line of pixel data in LINE BUFFER #2 as described above) via its DATA-2 inputs for the LEDs associated with Group C. The columns of LEDs corresponding to Groups A, B and C are determined by data values stored in a TEMPLATE RAM. The data from the TEMPLATE RAM is thus used to control a 2-bit selection control input of the data selector 420. As noted in Pham:

[2] See for example, U.S. Pat. No. 5,585,836, Col. 13, line 43-Col. 14, line 14.

> The *template RAM stores bow error data* in the form of identifying whether that LED is to be enabled by line n data, line n-1 data or line n-2 data. This data is to be enabled by line n data, line n-1 data or line n-2 data. This data is output as a signal to data selector 420 which thereby selects the particular pixel data from the three available lines. Thus, the three lines of pixel data are combined by data selector to form a single line of pixel data in accordance with the bow error or correction data upon which the template is based[3]. (emphasis added)

Thus, in Pham, the bow corrected pixel data is the output of the data selector 420, which drives the LEDs of the printhead. No where however, does Pham teach or suggest storing adjusted image data to a second memory location and deriving a laser signal from the adjusted image data in the second memory location as recited in claim 1. Moreover, Pham does not teach or suggest a second memory location for storing adjusted image data and a video processor operatively configured to derive a laser signal suitable for processing by the printhead based upon the adjusted image data from the second memory location.

Accordingly, the applicants respectfully request that the Examiner withdraw the rejection of claims 1, 21 and the claims that depend therefrom.

35 U.S.C. §103

Claims 5-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Pham in view of U.S. Pat. No. 6,445,404 to Kerby et al. (hereinafter, Kerby). Claims 5-7 depend from claim 1, which the applicants' respectfully assert is patentable as noted above. Kerby relates to methods of converting low resolution print data into relatively higher resolution print data formats.

The applicants' thus respectfully assert that Kerby combined with Pham does not teach or suggest storing adjusted image data to a second memory location and deriving a laser signal from the adjusted image data in the second memory location as recited in claim 1. Kerby combined with Pham also fails to teach or suggest at least a second memory location for storing adjusted image data and a video processor operatively configured to derive a laser signal suitable for

[3] See for example, U.S. Pat. No. 5,585,836, Col. 14, lines 33-41.

processing by the printhead based upon the adjusted image data from the second memory location as recited in claim 21.

Accordingly, the applicants respectfully request that the Examiner withdraw the rejection of claims 5-7 under 35 U.S.C. §103.

Claims 2, 14-18, 20 and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Pham in view of U.S. Pat. No. 5,719,680 to Yoshida et al. (hereinafter, Yoshida). Claims 2, 14-18, 20 depend from claim 1, and claim 28 depends from claim 21, which the applicants' respectfully assert are patentable as noted above.

The applicants respectfully assert that Yoshida combined with Pham does not teach or suggest storing adjusted image data to a second memory location and deriving a laser signal from the adjusted image data in the second memory location as claimed in claim 1. Yoshida combined with Pham further fails to teach or suggest a second memory location for storing adjusted image data and a video processor operatively configured to derive a laser signal suitable for processing by the printhead based upon the adjusted image data from the second memory location as claimed in claim 21.

With reference to Figs. 7 and 8 of Yoshida, it can be seen that the bow correction as taught by Yoshida is for all relevant purposes, the same as that taught in Pham. That is, in Yoshida, lines of pixel data are cascaded into a series of line buffers 72, 73, 74, 75, 76, 77. A data selector circuit 78 (multiplexer) drives the LEDs D1-D24 of the LED printhead by selecting portions of the line buffers 72-77 based upon control signals S0, S1 and S2[4], the corresponding strobe signals STB0-STB7 and associated NAND gates. As can be clearly seen in Fig. 7, the adjusted pixel data is used to directly drive the LEDs of the printhead and is not stored to a second memory location as claimed.

Accordingly, the applicants respectfully request that the Examiner withdraw the rejection of claims 2, 14-18, 20 and 28 under 35 U.S.C. §103.

[4] See for example, U.S. Pat. No. 5,719,680, Col. 4, lines 1-64.

Claim 22 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Pham in view of Yoshida and in further view of U.S. Pat. No. 5,764,243 to Baldwin (hereinafter, Baldwin). Claim 22 depends from claim 21, which the applicants' respectfully assert is patentable as noted above. Baldwin relates to providing a rasterizer that receives and processes 2D and 3D primitives from an external source by decomposing the primitives into multi-pixel fragments. Thus, the applicants respectfully assert that Yoshida combined with Pham and Baldwin does not teach or suggest a second memory location for storing adjusted image data and a video processor operatively configured to derive a laser signal suitable for processing by the printhead based upon the adjusted image data from the second memory location.

Accordingly, the applicants respectfully request that the Examiner withdraw the rejection of claim 22 under 35 U.S.C. §103.

Conclusion

For all of the above reasons, the applicants respectfully submit that the above claims recite allowable subject matter. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,
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